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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,047	09/25/2003	Timothy N. Obee	60246-217	6648

26096 7590 12/14/2007

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EXAMINER	
MAYEKAR, KISHOR	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
12/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/671,047	OBEE ET AL.	
	Examiner	Art Unit	
	Kishor Mayekar	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2007*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-13,16-18,21,22,24,26,27,30 and 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 4-13, 16-18, 21, 22, 24, 26, 27, 30 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's arguments with respect to claims 1, 4-13, 16-18, 21, 22, 24, 26, 27, 30 and 31 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 4, 5, 9-12, 16-18, 21, 22, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. ("Photocatalytic oxidation in the presence of microwave irradiation: observations with ethylene and water", Journal of Photochemistry and Photobiology A: Chemistry, Volume 148, pp. 323-330, May 31 2002) in view of Greene et al. (US 6,294,772 B1) and/or Homma et al. (US 5,777,300). Kataoka, a reference cited in the last office action, discloses a study on the influence of microwave irradiation on the photocatalytic oxidation of a test compound, ethylene, in a gas phase on a photocatalyst of TiO_2ZrO_2 mixed oxide thin films (see abstract). In the Introduction section, Kataoka discloses that the photocatalytic oxidation is known as an air purification technology. In the Experiment section, Kataoka discloses a coating of the photocatalyst on a substrate,

the ethylene in air, a microwave generator with a rectangular waveguide, and aluminum plates for preventing radiation leakage from the waveguide. The study indicates that the microwave irradiation removes water from the catalyst surface better than when heat is applied by conductive means, especially in Approach 2 (see conclusion starting on page 329). The difference between Kataoka and the above claims is the provision of porous screen for containing microwaves in the enclosure. Greene teaches in a microwave device the limitation (Figs. 1-3). Homma teaches in a microwave heating the device the same (Fig. 14 and col. 17, lines 35-48). The subject matter as whole would have been within the level of ordinary skill in the art at the time the invention was made to have modified Kataoka's teachings as shown by Greene and/or Homma because the selection of any of known equivalent structures of preventing leakage radiation leakage would have been within the level of ordinary skill in the art.

As to the subject matter of each of claims 10 and 11, Kataoka discloses it in Fig. 1 and 2, respectively.

As to the subject matter of claim 17, Kataoka disclose in the Experiment section.

As to the subject matter of claim 18, it is inherent in Kataoka's study. Further, the subject matter being a process limitation cannot be given any patentable weight in a claimed device.

As to the subject matter of each of claims 21 and 22, the subject matter being a process limitation cannot be given any patentable weight in a claimed device.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka as modified by Greene '772 and/or Homma '300 as applied to claims 1, 4, 5, 9-12, 16-18, 21, 22, 30 and 31 above, and further in view of Obee et al. (US 6,358,374 B1), another reference cited in the last Office action. The differences between the references as applied above and the instant claims are the use of an ozone generating lamp. Obee shows in an air purification system the use of infrared irradiation and microwave in addition to heater as a heat source (col. 5, lines 4-17) and the use ozone generating lamps as the light source (col. 5, lines 55-57). The subject matter as whole would have been within the level of ordinary skill in the art at the time the invention was made to have modified the references' teachings as shown by Obee because the selection of any of known equivalent light sources to activate the photocatalyst would have been within the level of ordinary skill in the art.

5. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka as modified by Greene '772 and/or Homma '300 as applied to claims 1, 4, 5, 9-12, 16-18, 21, 22, 30 and 31 above, and further in view of Kobayashi et al. (US 6,68,668 B1), another reference cited in the last office action. The differences between the references as applied above and the instant claims are the limitations in each of the instant claims. Kobayashi teaches in a photocatalytic material that each of the limitations (col. 3, lines 63-67 and col. 5, line 53 through col. 6, line 26). The subject matter as whole would have

been within the level of ordinary skill in the art at the time the invention was made to have modified the references' teachings as shown by Kobayashi because the selection of any of known equivalent photocatalyst would have been within the level of ordinary skill in the art and the provision of the metal oxide would increase the efficiency of the photocatalyst.

6. Claims 24, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka in view of either Scharfmann et al. (US 5,795,613) or Jansen et al. (US 5,811,031). Kataoka is applied as above. The difference between Kataoka and the above claims is the use of radiowave energy source. Scharfmann teaches in a process for making dried crisp cheese pieces the provision of the use of microwave or radiowave for the drying (paragraph 2 of col. 8). Jansen teaches in a method for the drying of aerogels the same (paragraph 5 of col. 2). The subject matter as whole would have been within the level of ordinary skill in the art at the time the invention was made to have modified Kataoka's teachings as shown by either Scharfmann or Jansen because the selection of any of known equivalent dielectric heating to activate the photocatalyst would have been within the level of ordinary skill in the art.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent

and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1, 4-9, 12, 17, 24, 26 and 27 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 12, 13, 16 and 17 of U.S. Patent No. 7,291,315 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because the above claims being broader than the patent claims comprise all the structures of the patent claims.

Response to Arguments

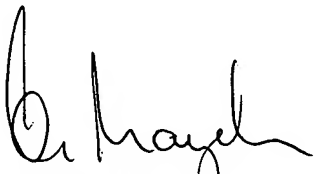
9. Applicant's arguments filed 24 September 2007 have been fully considered but they are not persuasive because of the new ground of rejections as set forth in the paragraphs above.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kishor Mayekar whose telephone number is (571) 272-1339. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Kishor Mayekar
Primary Examiner
Art Unit 1795